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(54) **Window frame construction**

Fensterzarge

Châssis dormant pour fenêtre

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Description

The present invention relates to a frame construction for fitting into an aperture of a wall, the frame construction comprising two vertical parts and two horizontal parts transversely connected to the vertical parts and an abutment listel connected to each vertical and horizontal part, the horizontal and vertical parts being constructed of bonded wooden elements.

Such a construction is known from EP-A-0059916. In this European patent application a door frame is described which is cheap to produce, which is fire proof and which can conveniently carry door hinges and connection means. The frame consists of two plates 8 and 9 which at their ends comprise respectively a groove 12 and a ridge 14. This groove and ridge are formed by lengthwise removal of material. The plates 8 and 9, which may be comprised of fiber board material can be adhesively connected, and comprise reinforcement impregnations at the positions of the groove and ridge.

The removal of the material to provide for grooves and ridges gives rise to a lot of waste material. Also, the known wood chip boards are not suitable for exposure to weather conditions. Furthermore, an extra impregnation step is required to provide a sufficiently strong connection.

On account of the maintenance costs, increasingly high standards are now being set for wood which is to be used for window frames and the like. These higher standards are being met by using alternative materials. Examples of these are hardwood, plastic and aluminium. The disadvantage of hardwood is that felling tropical forests is no longer considered acceptable. There are environmental problems with plastic, while the use of aluminium frames is expensive and energy-intensive.

Efforts have therefore been made to improve conventional wood materials such as pine. Various authorities have stipulated that the number of defects in wood per unit length must not exceed a certain value. These defects include knots, knarls, gum veins and the like. Attempts have been made to remove defects from the material by cutting pieces out of beams and gluing together the remaining parts of the beams with, for example, a finger joint. Such a connection does lead to the desired result that a reduced number of defects per linear metre is obtained, but it has the disadvantage that this method is expensive and a relatively large amount of waste is produced. This means that an unacceptable quantity of timber must be felled for obtaining window frames. If the width to be bridged - determined by the thickness of the wall - was relatively small, there were not too many problems until now with regard to the availability of the jamb-sill part. If, however, this width increases, it automatically means that either the wooden part must be wider, and is therefore more difficult to obtain, or this wooden part is made up of different parts, which is laborious.

The construction according to DE-B-1,133,107 does provide a solution to the width problem, but the use of plastics constitutes an environmental objection. Besides, it is not possible in the construction shown therein to make adjustments on site, because it is very conceivable that planing or the like will go through the plastic layer. Furthermore, considerable mould costs are involved in the construction shown there.

The object of the invention is to provide a window frame construction which does not have the disadvantages described above, with which it is possible to bridge a greater wall thickness without problems, and in the case of which environmentally friendly materials with good durability can be used as the starting materials.

This object is achieved in the case of a frame construction of the type described above in that the frame construction comprises an inward side and an outward side that is intended to be exposed to weather conditions, at least the lower one of the horizontal parts being on the upper outward side provided with a bevel, the vertical parts, the horizontal parts and the abutment listel each being formed of a substantially homogeneous, weather-resistant element of identical MDF-fibre board material comprising wood fibers and adhesive, all parts having a substantially rectangular cross-section and being adhesively connected along substantially flat surfaces.

The invention is based on the realisation that it is not necessary at all to use a solid wood part, i.e. a part with the structure corresponding to that occurring in the tree, for achieving a jamb or sill. In particular, there is no problem at all in using MDF-fibre board material for such jambs and sills, which is weather-resistant. The use of a board material which is weather-resistant throughout means that it is possible to provide a bevel and to make adjustments on site without the weather-resistant features being adversely affected as a result. With the construction according to the present invention it is possible to achieve all kinds of variations and adjustments cheaply, and all this can be carried out on site. Expensive moulds are no longer necessary.

It is pointed out that a construction for a door frame is known from WO-A-86/01557. This construction is made of parts glued together. However, a board material which is not weather-resistant and is provided with a sealing veneer to achieve weather resistance is used. Any working will immediately lead to the construction shown there no longer being weatherproof. This applies in particular to bevels of the type found in horizontal elements, and more particularly in the case of window frames, in window breasts and the like. Such a construction cannot be achieved with the structure according to the PCT publication. In the construction according to DE-A-2,227,825 the wood parts exposed to the weather are also provided with a protective covering.

The above-mentioned MDF-fibreboard is a compressed and cured mixture of wood fibres and adhesive. Examples

of the adhesive are urea melamine adhesive and tannin adhesive. These materials are decomposable in an environmentally friendly way, so that problems existing in the case of PVC plastic window frames in particular are not present here. Such fibreboards have particularly good weather resistance and sufficient strength to be suitable for use as wood material for window frames. Such materials are easy to paint and absorb moisture well. Moreover, it is easy to screw into these boards, and the firmness of the fixed screws is comparable to that of conventional "solid" wood.

The invention also relates to a method for producing a window frame construction of the type indicated above is characterised in that two horizontal parts, two vertical parts and an abutment listel are removed from a board of MDF fibre material, such that the width of the horizontal and vertical parts corresponds with the thickness of said wall part, the horizontal parts and the vertical parts being connected, at least one of the horizontal parts being provided with a bevel and the abutment listel being connected to the horizontal and the vertical parts all parts having a substantially rectangular cross-section and being adhesively connected along substantially flat surfaces. According to this method a jamb or sill part is removed from a larger board, for example by sawing or milling. The frame is made up by simply adhesively connecting different parts taken from a larger board of wood material.

The invention will be explained in greater detail below with reference to an example of an embodiment shown in the drawing, in which:

Figure 1 shows, partially in cross-section, a jamb according to the invention fitted in a wall;

Figure 2 shows, cut away, the construction of a corner of a jamb/window head, in which for the sake of clarity the wall is not shown; and

Figure 3 shows a cross-section of a sill member.

Figure 1 shows a part of a window frame construction according to the invention, and more particularly the jamb. This construction comprises the actual jamb 1, provided with laths 2 and 3 and a rebate listel 4. This construction is fitted in a cavity, the wall parts of which are indicated by 5 and 6. Jamb 1 according to the invention is made of a piece of MDF-fibre board material. A preferred MDF-fibre board material is composed of wood fibre material with tannin-based adhesive. Such boards can have dimensions of, for example, 3.66 m x 1.83 m. Owing to the size of such boards it is possible to produce any size of jamb 1 through sawing, without it being necessary - as in the state of the art with solid wood parts - to build up jamb 1 from different parts in the case of wider cavities. Apart from jamb 1, the remaining parts shown in figure 1 can, of course, also be made of fibreboard material.

Examples of the properties of MDF boards are as follows:

Table

Board properties:	
Board thickness	12, 15, 22 and 30 mm
Density	7500 N/m^3
Bending strength	30.0 N/mm^2
Tensile strength crosswise	70 N/cm^2
Screw firmness, surface	30 N/mm^2
Screw firmness, side	11.5 N/mm^2
Modulus of elasticity	2500 N/mm^2
Moisture content	8%.

Standards for such boards are to be found in American standard NPA-4-73.

Figure 2 shows the fixing of a window head, indicated in its entirety by 7, and a jamb 8 is shown. Holes 11, in which pins 12 are placed for the connection, are provided in both jamb 9 and window head 10. A particularly strong frame construction can be obtained in this way simply by gluing together. Jamb and window head are provided at one side with flat pieces and at the other side with head listels, with the result that the frame can recede relative to the outside of the wall (reveal).

Figure 3 shows a cross-section of the sill member, which also provides window sill 13, with a finishing listel 14 and rebate listel 15.

It can be seen from the combination of figures 1, 2 and 3 that a wall opening is finished completely by the frame construction, irrespective of the wall thickness. Although the invention is described above with reference to a preferred embodiment, it must be understood that numerous modifications can be made to it without going beyond the scope of the present appliation. For example, it is possible to achieve the structure of both the jamb and the sill using parts

adjoining each other in a different way.

Claims

1. Frame construction for fitting into an aperture of a wall, the frame construction comprising two vertical parts and two horizontal parts transversely connected to the vertical parts and an abutment listel (4) connected to each vertical and horizontal part, the horizontal and vertical parts being constructed of bonded wooden elements **characterised in that** the frame construction comprises an inward side and an outward side that is intended to be exposed to weather conditions, at least the lower one of the horizontal parts being on the upper outward side provided with a bevel, the vertical parts, the horizontal parts and the abutment listel each being formed of a substantially homogeneous, weather-resistant element of identical MDF-fibre board material comprising wood fibers and adhesive all parts having a substantially rectangular cross-section and being adhesively connected along substantially flat surfaces.

2. Frame construction according to claim 1, wherein each horizontal and vertical part comprises an edge surface defining the thickness of each part, a lath (3) being connected to the edge surface of the vertical parts and to the edge surface of at least one of the horizontal parts, the laths extending transversely to each respective vertical or horizontal part.

3. Frame construction according to any of the previous claims, the width of the lower horizontal part suitable for extending across the thickness of the wall and being integral with a window sill.

4. Method for producing a wooden window frame construction according to any of claims 1 to 4 extending over the thickness of the adjoining wall part, **characterized in that** two horizontal parts, two vertical parts and an abutment listel are removed from a board of MDF fibre material, such that the width of the horizontal and vertical parts corresponds with the thickness of said wall part, the horizontal parts and the vertical parts being connected, at least one of the horizontal parts being provided with a bevel and the abutment listel being connected to the horizontal and the vertical parts all parts having a substantially rectangular cross-section and being adhesively connected along substantially flat surfaces.

Patentansprüche

1. Rahmenkonstruktion zum Einbauen in eine Öffnung einer Wand, wobei die Rahmenkonstruktion zwei vertikale Teile und zwei transversal mit den vertikalen Teilen verbundene horizontale Teile und eine mit jedem vertikalen und horizontalen Teil verbundene Stoßleiste (4) aufweist, wobei die horizontalen und vertikalen Teile aus geklebten hölzernen Elementen bestehen, **dadurch gekennzeichnet**, daß die Rahmenkonstruktion eine innere und eine äußere Seite, die dazu bestimmt ist, den Wetterbedingungen ausgesetzt zu sein, aufweist, wobei zumindest die niedrigere der horizontalen Teile an der oberen äußeren Seite mit einer Abschrägung versehen ist, die vertikalen Teile, die horizontalen Teile und die Stoßleiste jede aus einem im wesentlichen homogenen, wetterbeständigen Element aus identischem MDF-Faserplattenmaterial gebildet werden, das Holzfasern und Klebstoffe umfaßt, wobei alle Teiie einen im wesentlichen rechteckigen Querschnitt haben und die miteinander entlang der im wesentlichen flachen Oberflächen klebend verbunden sind.

2. Rahmenkonstruktion nach Anspruch 1, worin jeder horizontale und vertikale Teil eine Kantenoberfläche, die die Dicke jedes Teils definiert, eine Latte (3), die mit der Kantenoberfläche der vertikalen Teile und mit der Kantenoberfläche von mindestens einem der horizontalen Teile verbunden ist, aufweist, wobei die Latten sich im wesentlichen transversal zu jedem entsprechenden vortikalen oder horizontalen Teil erstrecken.

3. Rahmenkonstruktion nach einem der vorangegangenen Ansprüche, wobei die Breite des unteren horizontalen Teils zum Quererstrecken über die Dicke der Wand geeignet ist und die einstückig mit einer Fensterschwelle ist.

4. Verfahren zum Herstellen einer hölzernen Fensterrahmenkonstruktion nach einem der Ansprüche 1 bis 3, die sich über die Dicke des angrenzenden Wandteils erstreckt, **dadurch gekennzeichnet**, daß zwei horizontale Teile, zwei vertikale Teile und eine Stoßleiste aus einer Platte eines MDF-Fasermaterials entnommen werden, derart, daß die Breite der horizontalen und vertikalen Teile mit der Dicke des Wandteils übereinstimmt, die horizontalen Teile und die vertikalen Teile miteinander verbunden werden, zumindest eine der horizontalen Teile mit einer Abschrä-

gung versehen ist und die Stoßleiste mit den horizontalen und den vertikalen Teilen verbunden ist, wobei alle Teile einen im wesentlichen rechteckigen Querschnitt haben und entlang der im wesentlichen flachen Oberfläche klebend verbunden sind.

Revendications

1. Construction de cadre pour l'adaptation dans une ouverture d'une paroi, la construction de cadre comprenant deux parties verticales et deux parties horizontales reliées transversalement aux parties verticales et un listel de butée (4) relié à chaque partie verticale et horizontale, les parties horizontales et verticales étant réalisées en éléments en bois reliés, caractérisée en ce que la construction de cadre comprend un côté intérieur et un côté extérieur qui est destiné à être exposé aux intempéries, au moins la partie inférieure des parties horizontales se trouvant sur le côté extérieur supérieur étant munie d'un chanfrein, les parties verticales, les parties horizontales et le listel de butée étant chacun formé d'un élément résistant aux intempéries sensiblement homogène de matériau de panneau de fibre-MDF comprenant des fibres de bois et un adhésif, toutes les parties ayant une section transversale sensiblement rectangulaire et étant reliées de façon adhésive le long des surfaces sensiblement planes.

2. Construction de cadre selon la revendication 1, dans laquelle chaque partie horizontale et verticale comprend une surface de bord définissant l'épaisseur de chaque partie, une latte (3) étant reliée à la surface de bord des parties verticales et à la surface de bord d'au moins l'une des parties horizontales, les lattes se prolongeant transversalement à chaque partie verticale ou horizontale respective.

3. Construction de cadre selon l'une quelconque des revendications précédentes, dans laquelle la largeur de la partie horizontale inférieure est appropriée pour se prolonger au travers de l'épaisseur de la paroi et est solidaire d'un rebord de fenêtre.

4. Procédé de fabrication d'une construction de cadre de fenêtre en bois selon l'une quelconque des revendications 1 à 3 se prolongeant sur l'épaisseur de la partie de paroi contiguë, caractérisé en ce que deux parties horizontales, deux parties verticales et un listel de butée sont retirés d'un panneau de matériau de fibre-MDF, afin que la largeur des parties horizontales et verticales corresponde à l'épaisseur de ladite partie de paroi, les parties horizontales et les parties verticales étant reliées, au moins l'une des parties horizontales étant munie d'un chanfrein et le listel de butée étant relié aux parties horizontales et verticales, toutes les parties ayant une section transversale sensiblement rectangulaire et étant reliées de façon adhésive le long des surfaces sensiblement planes.

fig-1

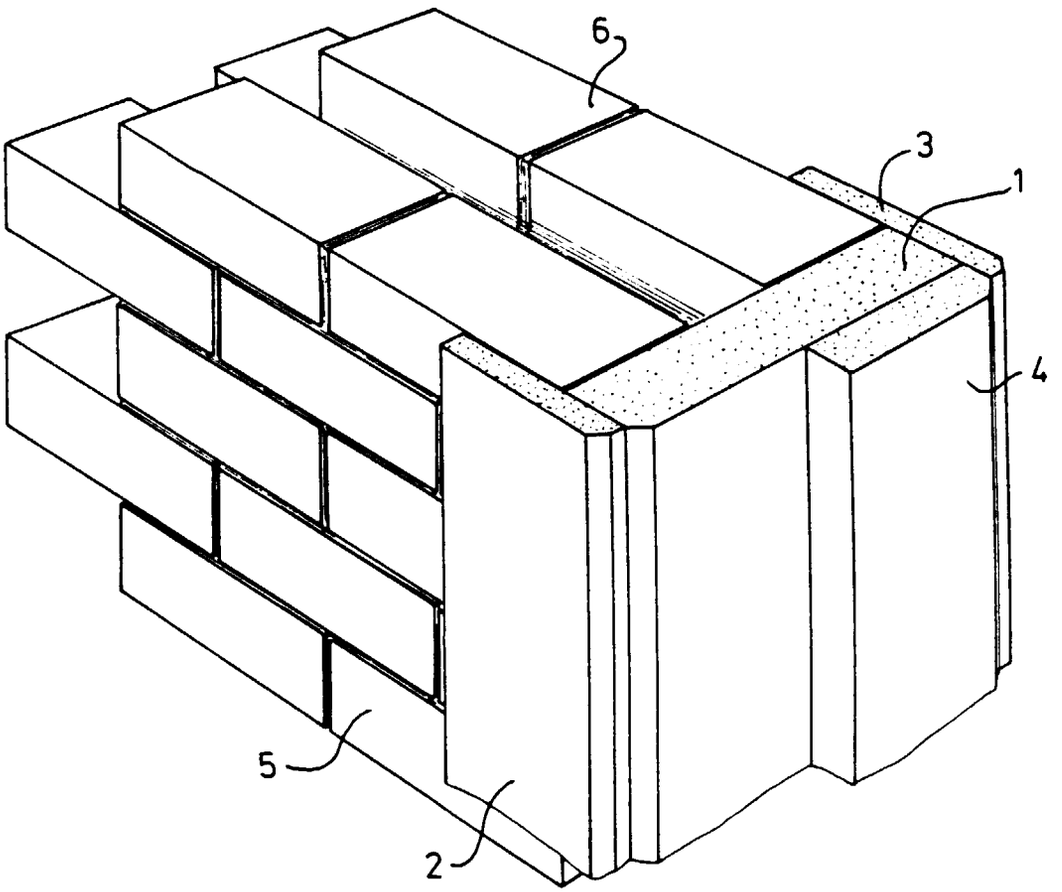

Fig-2

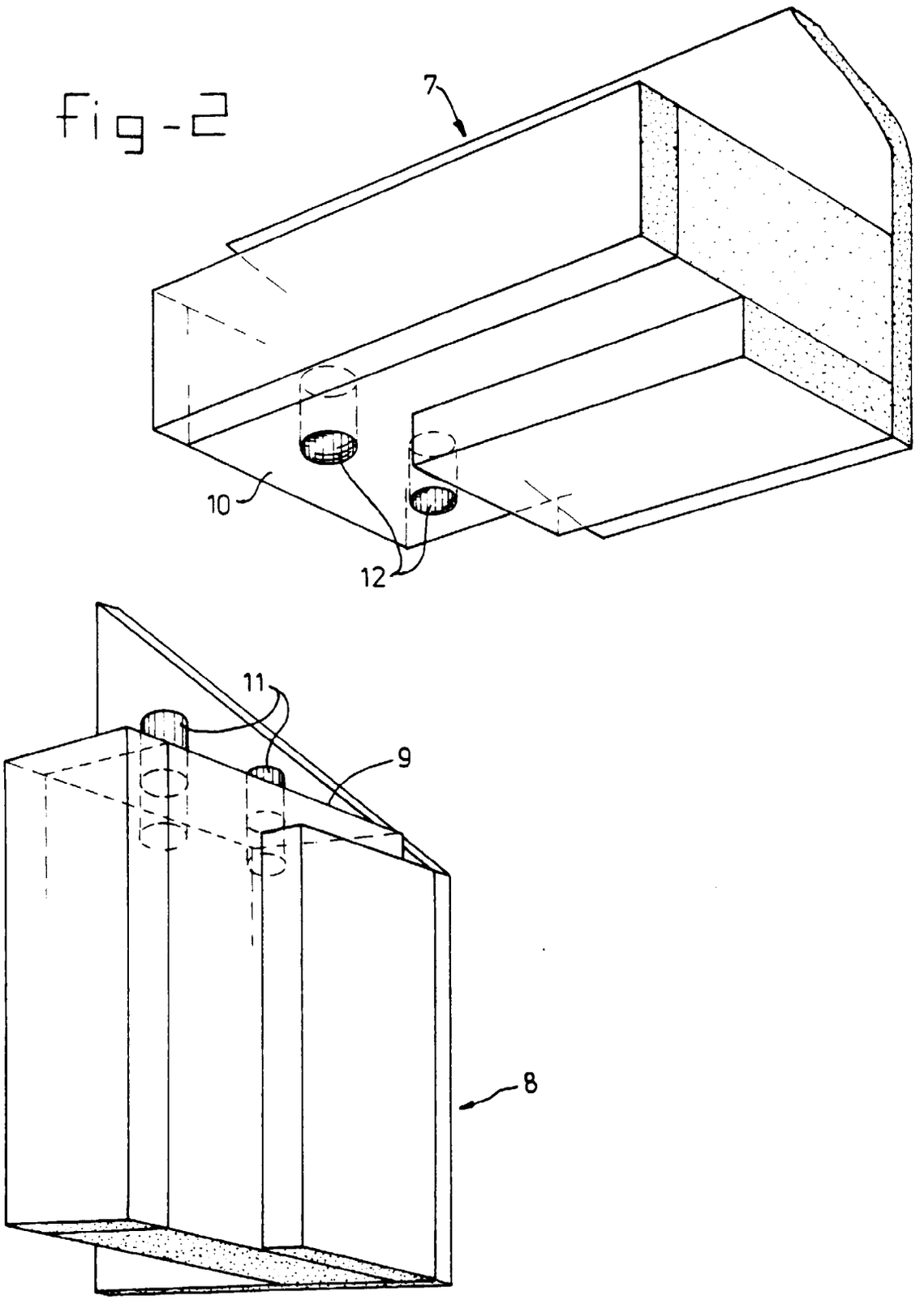

Fig-3